

FORM PTO-1449 <small>(Fill-A-Form 7.92)</small> INFORMATION DISCLOSURE CITATION (Use several sheets if necessary)										U. S. DEPARTMENT OF COMMERCE Patent and Trademark Office					Attorney's Docket Number 5820.640					Serial Number Not Yet Assigned				
Applicant Daniel E. Resasco, et al.										Filing Date Herewith					Group Unknown									

U. S. PATENT DOCUMENTS																
EXAM INIT.		DOCUMENT NUMBER							DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE			
/SH/	AA	3	7	4	6	6	5	7	07/17/1973	Miller et al.	252	437				
	AB	4	4	5	6	6	9	4	06/26/1984	Blaskie et al.	502	74				
	AC	4	5	7	4	1	2	0	03/04/1986	Thompson	502	220				
	AD	4	6	6	3	2	3	0	05/05/1987	Tennent	428	367				
	AE	5	1	6	5	9	0	9	11/24/1992	Tennent et al.	423	447				
	AF	5	2	2	7	0	3	8	07/13/1993	Smalley et al.	204	173				
	AG	5	3	0	0	2	0	3	04/05/1994	Smalley	204	157				
	AH	5	4	0	5	9	9	6	04/11/1995	Suzuki et al.	562	548				
	AI	5	4	8	2	6	0	1	01/09/1996	Ohshima et al.	204	173				
	AJ	5	5	4	3	3	7	8	08/06/1996	Wang	502	174				
	AK	5	5	5	6	5	1	7	09/17/1996	Smalley	204	157				
	AL	5	5	6	0	8	9	8	10/01/1996	Uchida et al.	423	461				
	AM	5	5	7	8	5	4	3	11/26/1996	Tennent et al.	502	180				
	AN	5	5	8	7	1	4	1	12/24/1996	Ohshima et al.	423	461				
	AO	5	5	9	1	3	1	2	01/07/1997	Smalley	204	157				
	AP	5	6	0	3	9	0	7	02/18/1997	Grochowski	423	210				
	AQ	5	6	4	8	0	5	6	07/15/1997	Tanaka	423	445				
	AR	5	6	4	1	4	6	6	06/24/1997	Ebbesen et al.	423	447				
	AS	5	6	9	5	7	3	4	12/09/1997	Ikazaki et al.	423	461				
	AT	5	6	9	8	1	7	5	12/16/1997	Hiura et al.	423	447				
	AU	5	7	0	7	9	1	6	01/13/1998	Snyder et al.	502	416				
	AV	5	7	4	4	2	3	5	04/28/1998	Creehan	428	364				
	AW	5	7	5	3	0	8	8	05/19/1998	Olk	204	173				
↓	AX	5	7	7	3	8	3	4	06/30/1998	Yamamoto et al.	204	192				
	AY	5	7	8	0	1	0	1	07/14/1998	Nolan et al.	427	216				
/SH/	AZ	5	8	1	4	2	9	0	09/29/1998	Niu et al.	423	344				

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EXAM INIT.		DOCUMENT NUMBER							DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
/SH/	AZA	5	8	7	7	1	1	0	03/02/1999	Snyder et al.	502	180	
/SH/	AZB	5	9	6	5	2	6	7	10/12/1999	Nolan et al.	428	408	
/SH/	AZC	5	9	8	5	2	3	2	11/16/1999	Howard et al.	423	447	
/SH/	AZD	5	9	9	7	8	2	3	12/07/1999	Lieber et al.	423	249	

FOREIGN PATENT DOCUMENTS

EXAM INIT.		Office	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	Translation	
								YES	NO
/SH/	BA	PCT/US00/15362			International Search Report				
	BB	PCT/US02/23155		07/21/2003	International Search Report				
	BC	WO 00/73205		12/07/2000	PCT/US				
	BD	WO 97/09272		03/13/1997	PCT/US			X	
	BE	WO 98/392550		09/11/1998	PCT/US			X	
	BF	WO 98/42620		10/01/1998	PCT/JP				X
	BG	406122489		05/1994	Japan			X	
↓	BH	WO 00/17102		03/30/2000	PCT International Publication				

NON PATENT DOCUMENTS

Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published

/SH/	CA	Alvarez et al., "Synergism of Co and Mo in the catalytic production of single-wall carbon nanotubes by decomposition of CO", Elsevier Science Ltd., Carbon 39 (2001), pp. 547-558.
/SH/	CB	Bandow et al., "Effect of the Growth Temperature on the Diameter Distribution and Chirality of Single-Wall Carbon Nanotubes", The American Physical Society, Physical Review Letters, Vol. 80, No. 17, (1998), pp. 3779-3782.
/SH/	CC	Bethune et al., "Cobalt-Catalysed Growth of Carbon Nanotubes with Single-Atomic-Layer Walls," Nature, 363:605-607, Jun 1993.
/SH/	CD	V. Brotons et al., "Catalytic influence of bimetallic phases for the synthesis of single-walled carbon nanotubes", JOURNAL OF MOLECULAR CATALYSIS, A: Chemical 116 (1997) 397-403.

EXAM INIT.		<p style="text-align: center;">NON PATENT DOCUMENTS</p> <p>Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published</p>
/SH/	CE	Cassell et al., "Large Scale CVD Synthesis of Single-Walled Carbon Nanotubes", AMERICAN CHEMICAL SOCIETY, pp. 6483-6492, 1999.
	CF	Chaturvedi et al., "Properties of pure and sulfided NiMoO ₄ and CoMoO ₄ catalysts: TPR, XANES and time-resolved XRD studies", Database Accession No. EIX99044490981 XP002246342, Proceedings of the 1997 Mrs Fall Symposium, Boston, MA, USA, December 2-4, 1997; Mater Res Soc Symp Proc, Materials Research Society Symposium-Proceedings, Recent Advances in Catalytic Materials, 1998, Mrs. Warrendale, PA, USA.
	CG	Che et al., "Chemical Vapor Deposition Based Synthesis of Carbon Nanotubes and Nanofibers Using a Template Method", CHEMICAL MATER. 1998, 10, PP. 260-267.
	CH	Chen et al., "Growth of carbon nanotubes by catalytic decomposition of CH ₄ or CO on a Ni-MgO catalyst", CARBON VOL. 35, No. 10-11, pp. 1495-1501, 1997.
	CI	Cheng et al.; "Bulk Morphology and Diameter Distribution of Single-Walled Carbon Nanotubes Synthesized by Catalytic Decomposition of Hydrocarbons," Chemical Physics Letters, 289:602-610, 1998.
	CJ	Cheng et al.; "Large-Scale and Low-Cost Synthesis of Single-Walled Carbon Nanotubes by the Catalytic Pyrolysis of Hydrocarbons," Applied Physics Letters, 72(25):3282-3284, 06/25/98.
	CK	Dai et al.; "Single-Wall Nanotubes Produced By Metal-Catalyzed Disproportionation of Carbon Monoxide," Chemical Physics Letters, 260:471-475, 1996.
	CL	Database, Accession No. 1999-366878, Cano, "Canno KK", XP-002149235, 05/25/1999.
	CM	De Boer et al., "The cobalt-molybdenum interaction in CoMo/SiO ₂ catalysts: A CO-oxidation study", Elsevier Science Ltd., Solid State Ionics 63-65 (1993), pp. 736-742.
	CN	Fonseca et al., "Synthesis of single-and multi-wall carbon nanotubes over supported catalysts", APPLIED PHYSICS A, 67, PP. 11-22, 1998.
	CO	Govindaraj et al., "Carbon structures obtained by the disproportionation of carbon monoxide over nickel catalysts", MATERIALS RESEARCH BULLETIN, Vol. 33, No. 4, pp. 663-667, 1998.
	CP	Hafner et al., "Catalytic growth of single-wall carbon nanotubes from metal particles", CHEMICAL PHYSICS LETTERS, 296, PP 195-202, 1998.
V	CQ	Hernadi et al., "Catalytic synthesis of carbon nanotubes using zeolite support", ELSEVIER SCIENCE INC. 1996.

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		Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published
/SH/	CR	HYPERION CATALYSIS INTERNATIONAL Website; http://www.fibrils.com/esd.htm ; "Unique Slough Resistant SR™ Series ESD Thermoplastic Product Line Offers Reduced Particle Contamination For Demanding Electronic Applications," and Hyperion Homepage http://www.fibrils.com . 11/19/01
	CS	Iijima, Sumio; "Helical Microtubules of Graphitic Carbon," Nature, 354:56-58, Nov 1991.
	DA	Iijima et al.; "Single-Shell Carbon Nanotubes of 1-nm Diameter", Nature 363:603-605, Jun 1993.
	DB	Ivanov et al.; "The Study of Carbon Nanotubes Produced by Catalytic Method," Chemical Physics Letters 223:329-335, 1994.
	DC	Journet et al.; "Large-Scale Production of Single-Walled Carbon Nanotubes by the Electric-Arc Technique," Nature, 338:756-758, Aug 1997.
	DD	B. Kitiyanan et al., "Controlled production of single-wall carbon nanotubes by catalytic decomposition of CO on bimetallic Co-Mo catalysts", CHEMICAL PHYSICS LETTERS, 317 (2000), pp. 497-503, 2/4/2000.
	DE	Krishnankutty et al.; "The Effect of Copper on the Structural Characteristics of Carbon Filaments Produced from Iron Catalyzed Decomposition of Ethylene," Catalysts Today, 37:295-307, 1997.
	DF	Li et al., "Large-Scale Synthesis of Aligned Carbon Nanotubes", SCIENCE, Vol. 274, pp. 1701-1703. 12/14/96
	DG	Rinzler et al.; "Large-Scale Purification of Single-Wall Carbon Nanotubes: Process, Product, and Characterization," Applied Physics A, 67:29-37, 1998.
	DH	Thess et al., "Crystalline Ropes of Metallic Carbon Nanotubes, SCIENCE, Vol. 273, pp. 483-487. 7/26/96
	DI	I. Willems et al., "Control of the outer diameter of thin carbon nanotubes synthesized by catalytic decomposition of hydrocarbons", CHEMICAL PHYSICS LETTERS, 317 (2000) pp. 71-76.
✓	DJ	Yakobson et al.; "Fullerene Nanotubes: C _{1,000,000} and Beyond," <u>American Scientist</u> , 85:324-337, Jul-Aug 1997.
EXAMINER	/Stuart Hendrickson/ (02/19/2008)	
	DATE CONSIDERED	
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Complete if Known	
Application Number	10/689,258
Filing Date	10/20/2003
First Named Inventor	Daniel E. Resasco et al.
Group Art Unit	1754
Examiner Name	S. Hendrickson
Attorney Docket Number	5820.640

U. S. PATENT DOCUMENTS						
EXAM INIT.	Cite No. 1	U.S. PATENT NUMBER Number	Kind Code ² (If known)	Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM- DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
/SH/		5424054		Bethune	06/13/1995	
		5456897		Moy et al.	10/10/1995	
		5500200		Mandeville et al.	03/19/1996	
		5747161		Iijima	05/05/1998	
		6099965		Tennent et al.	08/08/2000	
		6221330		Moy et al.	04/24/2001	
		6312303		Yaniv et al.	11/06/2001	
		6401526		Dai et al.	06/11/2002	
		6413487		Resasco et al.	07/02/2002	
		6426134		Lavin et al.	07/30/2002	
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		6479939		Yaniv et al.	11/12/2002	
		6573643		Kumar et al.	06/03/2003	
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		6596187		Coll et al.	07/22/2003	
		6599961		Pienkowski et al.	07/29/2003	
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✓		6656339		Talin et al.	12/02/2003	

U. S. PATENT DOCUMENTS

EXAM INIT.	Cite No. 1	U.S. PATENT NUMBER Number	Kind Code ² (if known)	Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM- DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
/SH/		6683783		Smalley et al.	01/27/2004	
		6699457		Cortright et al.	03/02/2004	
		6752977		Smalley et al.	06/22/2004	
		6761870		Smalley et al.	07/13/2004	
		6936233		Smalley et al.	08/30/2005	
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		60/114588		Smalley et al.	12/31/1998	
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		2002/0084410		Colbert et al.	07/04/2002	
		2002/0094311		Smalley et al.	07/18/2002	
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		US2002/0127171A1		Smalley et al.	09/12/2002	
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		US2003/0077515A1		Chen et al.	04/24/2003	
		US2003/0089893A1		Niu et al.	05/15/2003	
		US2003/0147802A1		Smalley et al.	08/07/2003	
		US2003/0175200A1		Smalley et al.	09/18/2003	
		US2003/0180526A1		Winey et al.	09/25/2003	
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V		US2004/0028859A1		LeGrande et al.	02/12/2004	


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EXAM INIT.	Cite No. 1	Foreign Patent Document			Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines Lines, Where Relevant Passages or Relevant Figures Appear	T*
		Office 3	Number 4	Kind Code5 (if known)				
/SH/			PCT/US03/19664		International Search Report	03/31/2004		
			WO 00/26138		PCT/US	05/11/2000		
			WO 02/060813A2		PCT/US	08/08/2002		
			WO 03/048038		PCT/US	06/12/2003		
			WO 04/001107		PCT/US	12/31/2003		
			EP 01 93 9821		European Search Report	06/09/2004		
			EP 0 945 402 A1		SHIMADZU CORP; Res. Inst. Innovative Tech. Earch	09/29/1999		
			JP 06/228824		Japanese Patent			X
			JP 11/139815		Japanese Patent	05/25/1999		X

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PATENT DOCUMENTS

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/SH/		ANDERSON et al., "50 nm Polystyrene Particles via Miniemulsion Polymerization", <i>Macromolecules</i> , American Chemical Society, vol. 35, pp. 574-576, 2002.
/SH/		BANDOW ET AL., "Purification of Single-Wall Carbon Nanotubes by Microfiltration," <i>J.Phys.Chem.B</i> , Vol. 101, (1997) pp 8839-8842.
/SH/		BOWER et al., "Deformation of Carbon Nanotubes in Nanotube-Polymer Composites", <i>Applied Physics Letters</i> , vol. 74, no. 22, pp. 3317-3319, 05/31/1999.
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EXAM INIT.		<p align="center">PATENT DOCUMENTS</p> <p align="center">Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published</p>
/SH/		CHATTOPADHYAY, et al., "A Route for Bulk Separation of Semiconducting from Metallic Single-Wall Carbon Nanotubes", Journal of American Chemical Society, Vol. 125, No. 11, pp. 3370-3375, 2003.
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		Patent Abstracts of Japan, Vol. 1996, no. 12, December 26, 1996, and JP 0 8 198611 A (NEC CORP), Aug. 6, 1996, Abstract.
		POMPEO et al., "Water Solubilization of Single-Walled Carbon Nanotubes by Functionalization with Glucosamine", Nano Letters, American Chemical Society, vol. 2, no. 4, pp. 369-373, 2002.
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		TIARKS et al., "Encapsulation of Carbon Black by Miniemulsion Polymerization", Macromol. Chem. Phys., vol. 202, pp. 51-60, 2001.
		TIARKS et al., "Silica Nanoparticles as Surfactants and Fillers for Latexes Made by Miniemulsion Polymerization", Langmuir, American Chemical Society, vol. 17, pp. 5775-5780, 2001.
✓		ZHAO, et al., "Chromatographic Purification and Properties of Soluble Single-Walled Carbon Nanotubes", American Chemical Society, Page Est: 4.1, pp. A-E, 02/22/2001.
/SH/		ZHU et al., "Direct Synthesis of Long Single-Walled Carbon Nanotube Strands", Science, vol. 296, pp. 884-886, 05/13/2002.
Non Patent Documents: ¹ Unique citation designation number. ² Applicant is to place a check mark here if English language Translation is attached.		
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